REMARKS

On page 2 of the Action, claim 15 was rejected under 35 U.S.C. 112, second paragraph. On page 3 of the Action, claims 1-2, 5 and 14-17 were rejected under 35 U.S.C. 102(b) as being anticipated by Shunichi, JP 05-267235. On page 5 of the Action, claims 6-7, 9-10 and 12-13 were rejected under 35 U.S.C. 103(a) as being unpatentable over Shunichi in view of Lilleland et al., U.S. Patent 6,073,577.

In view of the rejections, claims 1 has been amended to clarify the features of the invention, and claim 15 has been amended to correct dependency. Also, clerical errors of claims 4 and 6 have been amended.

As clearly recited in amended claim 1, according to the present invention, a plasma-enhanced processing apparatus basically includes a process chamber for processing a substrate therein having a wall; a pumping system communicating with said process chamber for exhausting gas in the process chamber; a gas-introduction system that introduces process gas into the process chamber; plasma-generation means that generates plasma in the process chamber by applying energy to the process gas; a substrate holder that holds the substrate in the process chamber; and an opposite electrode disposed in the process chamber to face the substrate held by the substrate holder.

In the invention, the opposite electrode includes a front board facing the substrate holder; a clamping plate disposed at a front side of the front board close to the substrate holder so that an area of the front board not covered by the clamping plate is exposed to plasma; and a main body installed on the wall of the process chamber and disposed at a back side of the front board opposite to the front side. The front board is sandwiched between the clamping plate and the main body without a screw. The clamping plate contacts a front surface of the front board and presses the

front board toward the main body so that a back surface of the front board is contacted and pressed uniformly onto the main body.

In the invention, the main body is covered by the front board, and the front board is clamped by the clamping mechanism, in which the front board is sandwiched between the clamping plate and the main body without using a screw. Thus, no strong localized force is applied to the main body. Also, the front board can contact the main body uniformly, so that the main body has a relatively uniform thermal distribution in operation.

Incidentally, the uniformly contacted state between the front board and the main body means that the front board and the main body may contact in some degree, and does not mean that the front board and the main body completely contact each other.

Shunichi cited in the Action relates to a dry-etching system. In the etching system, an upper electrode 12 and a lower electrode 14 are disposed in a vacuum chamber 10. The upper electrode 12 has a circular shape formed of a single crystal silicone. A back plate 30 having a same circular shape is disposed on a backside of the upper electrode 12. The upper electrode 12 is attached to a lower end portion of a cooling jacket 32 through the back plate 30 with bolts 34. An annular supporting plate 46 is attached to an upper opening of the vacuum chamber 10 around the cooling jacket 32. A flange portion 32b of the cooling jacket 32 is placed on a step portion 46a of the annular supporting plate 46 from above, so that the cooling jacket 32, the back plate 30 and the upper electrode 12 are supported.

In the Action, it was held that the step portion 46a corresponds to the clamping plate of the invention, and is disposed at a front side of the front board close to the substrate holder. However, as shown in Fig. 1 in Shunichi, the step portion 46a is just a step formed on an inner surface of the annular supporting plate 46 for placing the flange portion 32b of the cooling jacket

32 thereon. In Shunichi, the upper electrode 12 corresponding to the front board of the invention is not sandwiched between the clamping plate 46a and the back plate 30 corresponding to the main body of the invention. The upper electrode 12 does not even contact the step portion 46a. Accordingly, in Shunichi, there is no member corresponding to the clamping plate of the invention.

In Shunichi, the upper electrode 12 is attached to a lower end portion of the cooling jacket 32 through the back plate 30 with the bolts 34. In other words, the upper electrode 12 contacts the back plate 30 through tightening of the bolts 34. Accordingly, the back plate 30 and the upper electrode 12 may generate localized stress around the bolts 34, thereby causing uneven thermal distribution in operation.

In the invention, the front board is clamped by the clamping mechanism, and the front board is sandwiched between the clamping mechanism and the main body without using a screw. According, it is possible to eliminate such localized force applied to the main body, so that the front board can contact the main body uniformly, thereby obtaining uniform thermal distribution in operation. Shunichi does not disclose or even suggest these basic mechanisms.

Therefore, the features recited in claim 1 of the invention are not disclosed or suggested in Shunichi.

Lilleland et al. discloses an electrode assembly for plasma processes. The electrode assembly includes a support member 44, a silicon showerhead electrode 42, and an elastomeric joint 46 disposed between the support member 44 and the electrode 42. The electrode assembly can be substituted for an electrode assembly 10 and a support ring 12 shown in Fig. 1.

In Lilleland et al., the electrode 42 is attached to the support member 44 through the elastomeric joint 46, and there is no member pressing the electrode 42 toward the supporting member 44.

In the invention, the front board is clamped by the clamping mechanism, in which the front board is sandwiched between the clamping mechanism and the main body. In Lilleland et al., there is no clamp mechanism corresponding to that of the invention.

In the Action, it was held that a plasma confinement ring 17 is flush with the front board of the upper electrode. However, as shown in Fig. 1 and explained in column 2, lines 39-57 of Lilleland et al., the ring 17 surrounds the outer periphery of the electrode 10, and the ring 17 is superposed under a dielectric annular ring 18. Thus, the ring 17 is not flush with the electrode 10, and does not constitute the flush arrangement of the invention.

Therefore, the Examiner's opinion referring to Lilleland et al. is not actually disclosed or even suggested in Lilleland et al.

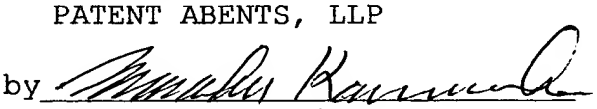
As explained above, the cited references do not disclose or suggest the features of the invention. Even if the cited references are combined, the present invention is not obvious from the cited references.

Reconsideration and allowance are earnestly solicited.

A two month extension of time is hereby requested. A check in the amount of $420.00 is attached herewith for the two month extension of time.

Respectfully Submitted,

HAUPTMAN KANESAKA BERNER
PATENT ABENTS, LLP

by 
Manabu Kanesaka
Reg. No. 31,467
Agent for Applicants

1700 Diagonal Road, Suite 310
Alexandria, VA 22314
(703) 519-9785